CASE STUDY—ADVANCED MONITORING
SUCCESSFUL PARTNERING IN THE VERIFICATION OF MERCURY CEMS

Partnership in an ETV verification can take several forms. A partnership can leverage ETV funds through financial or in-kind contributions, may provide a test facility or site, may contribute valuable technical insights, or may further the recognition and acceptance of ETV test results. Partnerships may involve other EPA programs, other federal or non-federal agencies, various other kinds of organizations, and even individuals. An excellent example of partnerships in ETV verification is the testing of continuous emission monitors (CEMs) for mercury in ETV's Advanced Monitoring Systems Center. That verification effort has involved partner contributions in all the forms noted above. Verification of mercury CEMs is of great interest both to industry and state agencies because of EPA's efforts to regulate mercury emissions from large combustion sources, such as incinerators and electricity generating stations.

Verification of mercury CEMs began with Phase 1 testing in early 2001. The major partnerships in that verification were with EPA's National Risk Management Research Laboratory (NRMRL) and the State of Massachusetts. NRMRL provided as the test site a pilot-scale gas-fired incinerator that provided control of the mercury concentration, the extent of mercury oxidation, and the levels of other contaminants such as sulfur dioxide, nitrogen oxides, carbon monoxide, hydrogen chloride, chlorine, and particulate matter. Massachusetts contributed $50,000 in funding for the verification. In addition, EPA staff provided technical guidance on test procedures and on the implementation of the reference method for mercury measurements.

Four mercury CEMs were tested in the Phase 1 verification, and extensive partner contributions were made in the review of the verification reports and the dissemination of the results. Representatives of the state environmental agencies of New York, Massachusetts, Maine, and Florida provided review comments on the reports and publicized the availability of the results through organizations such as the New England Governors' Conference and the Northeast States for Coordinated Air Use Management (NESCAUM).

The high visibility of the Phase 1 verification results and continued interest in mercury CEMs led to a second phase of ETV verification, in which partnership again plays a key role. The Phase 2 verification of mercury CEMs is taking place at the U.S. Department of Energy (DOE) TSCA Incinerator at Oak Ridge National Laboratory. The Phase 2 test focuses on routine long-term operation of the CEMs at a full-scale facility. Financial support exceeding $400,000 is provided by DOE for the Phase 2 testing. Five CEM vendors with a total of six mercury CEMs are participating in this verification, making it the largest such evaluation ever conducted in the United States. Given the magnitude of this verification testing, it is unlikely that it could be conducted without the DOE partnership. The Phase 2 mercury CEM verification reports will provide potential CEM users, regulators, ETV partners, and the CEM vendors with highly credible long-term performance data on these monitors.

The extended period of the Phase 2 mercury CEM tests responds to the recommendation of the EPA Science Advisory Board (SAB) that ETV verification tests be conducted for extended periods of time. In addition, further testing is planned that will address SAB's interest in a wider range of test conditions. Specifically, a Phase 3 test is planned in which the mercury CEMs will be operated at a full-scale coal-fired generating station for an extended period of time. Coal-fired facilities are one of the largest source categories for mercury emissions, and the flue gas composition and conditions at such plants differ markedly from those at an incinerator. Thus, extended testing of the mercury CEMs at a coal-fired facility will greatly broaden the range of conditions under which the CEMs have been tested. Partnerships to conduct the Phase 3 test are under development at this time with the utility industry (e.g., EPRI, individual utilities) and with state regulatory agencies.